

# SEQUENCE LISTING

<110> Takeda Chemical Industries, Ltd.

<120> Betacellulin Mutein

<130> 2576WOOP

<150> JP 10-350377

<151> 1998-12-09

<150> JP 11-55326

<151> 1999-03-03

<160> 56

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<212> PRT

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Gly	His	Phe	Ser	Arg	Cys	Pro	Lys	Gln	Tyr	Lys	His	Tyr	Cys	Ile	Lys
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Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys
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			20					25					30		
Gly	His	Phe	Ser	Arg	Cys	Pro	Lys	Gln	Tyr	Lys	His	Tyr	Cys	Ile	Lys
	35						40					45			
Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys
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 Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp  
 35 40 45

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 Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val  
 35 40 45

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 20 25 30  
 Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys  
 35 40 45  
 Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys  
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 Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Leu Phe Tyr  
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 20 25 30  
 Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

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Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys				
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Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys				
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		20						25					30						
Gly	His	Phe	Ser	Arg	Cys	Pro	Lys	Gln	Tyr	Lys	His	Tyr	Cys	Ile	Lys				
	35					40					45								
Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys				
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			20					25					30				
Gly	His	Phe	Ser	Arg	Cys	Pro	Lys	Gln	Tyr	Lys	His	Tyr	Cys	Ile	Lys		
		35					40					45					
Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys		
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 35 40 45  
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<212> PRT

<213> Artificial Sequence

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Ile	Lys	Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys
			20				25					30			
Val	Cys	Asp	Glu	Gly	Tyr	Ile	Gly	Ala	Arg	Cys	Glu	Arg	Val	Asp	Phe
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Tyr

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Ile	Lys	Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys
			20				25					30			
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CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC  
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<211> 228

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<213> Artificial Sequence

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CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC  
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 GCAAGGTGTG AGAGAGTTGA C  
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 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC  
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<210> 21  
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 237

<210> 23  
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120  
 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC  
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 TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTGA CTTT  
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 <211> 22  
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22

<210> 33

<211> 26

<212> DNA

<213> Artificial Sequence

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26

<210> 34

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<212> DNA

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22

<210> 35

<211> 80

<212> PRT

<213> Human

<400> 35

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20 25 30

Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys  
35 40 45

Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys  
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<211> 240

<212> DNA

<213> Human

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120

CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC  
180

TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTGA CTTGTTTTAC

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 His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys Gly  
 35 40 45  
 Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys Asp  
 50 55 60  
 Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val  
 65 70 75  
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 <211> 53  
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 <400> 38  
 Ala Thr Thr Thr Gln Ser Lys Arg Lys Gly His Phe Ser Arg Cys Pro  
 1 5 10 15  
 Lys Gln Tyr Lys His Tyr Cys Ile Lys Gly Arg Cys Arg Phe Val Val  
 20 25 30  
 Ala Glu Gln Thr Pro Ser Cys Val Cys Asp Glu Gly Tyr Ile Gly Ala  
 35 40 45  
 Arg Cys Glu Arg Val  
 50 53  
 <210> 39  
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 <212> DNA  
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<210> 42

<211> 225

<212> DNA

<213> Artificial Sequence

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120

TACAAGCATT ACTGCATCAA AGGGAGATGC CGCTTCGTGG TGGCCGAGCA GACGCCCTCC

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<211> 159

<212> DNA

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<400> 43

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120

TGTGATGAAG GCTACATTGG AGCAAGGTGT GAGAGAGTT

159

<210> 44

<211> 53

<212> PRT

<213> Artificial Sequence

<400> 44

Arg Lys Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys

5

10

15

Ile Lys Gly Arg Cys Arg Phe Val Val Ala Glu Gln Asn Pro Ser Thr

20

25

30

Pro Ser Cys Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg

35

40

45

Val Asp Leu Phe Tyr

50

<210> 45

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                           20                          25                          30  
 Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Leu Phe Tyr  
           35                          40                          45  
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 Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys  
                           20                          25                          30  
 Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys  
           35                          40                          45  
 Gly Arg Cys Arg Phe Val Val Ala Glu Gln Asn Pro Ser Thr Pro Ser  
           50                          55                          60  
 Cys Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp  
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 Leu Phe Tyr  
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           120  
 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGAACCCC  
           180  
 TCGACGCCCT CCTGTGTCTG TGATGAAGGC TACATTGGAG CAAGGTGTGA GAGAGTTGAC  
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 <210> 48  
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<212> DNA

<213> Artificial Sequence

<400> 48

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120

TACATTGGAG CAAGGTGTGA GAGAGTTGAC TTGTTTTAC

159

<210> 49

<211> 144

<212> DNA

<213> Artificial Sequence

<400> 49

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120

TGTGAGAGAG TTGACTTGTT TTAC

144

<210> 50

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<212> DNA

<213> Artificial Sequence

<400> 50

AGCATATGCG GAAAGGCCAC TTCTCTAGGT  
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<210> 51

<211> 30

<212> DNA

<213> Artificial Sequence

<400> 51

CTGGATCCTA GTAAAACAAG TCAACTCTCT  
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<210> 52

<211> 30

<212> DNA

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<400> 52

GAAATAATTT TGTTTAACTT TAAGAAGGAG  
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<210> 53

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